

Date 11/2/43Those Eligible 43-11-44
To Read The
AttachedSubject BIOLOGICAL MONITORING OF WASTE WATER

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CLINTON LABORATORIES

DATE

TO R. L. Doan

DEPARTMENT Research

FROM H. J. Curtis

DEPARTMENT Health

1: R. L. Doan ✓
2: H. J. Curtis
3: Dr. R. S. Stone
4: K. S. Cole
5: Marjorie Day
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IN RE: Biological Monitoring of Waste Water

PROBLEM: The waste water from the ^{plant} will flow into White Oak Creek, and at the point of entry into the creek it should be, radiologically speaking, fit for human consumption. The creek flows into White Oak Lake which will constitute an additional holding pond. The lake empties into the Clinch River, so the lake water will be many times diluted by the river water. The river water will be used as the water supply for several towns below the plant. In view of the uncertainties involved, both from radiological and heavy metals points of view, it is felt that it would be desirable to biologically monitor the water in the lake.

PRESENT STATUS OF PROBLEM: The tolerance concentration of any given radioactive element depends upon its absorption and retention by the body, and is therefore different for all elements. It is thus not possible to set up a radiological tolerance for drinking water in general. Some data exists by which tolerance doses of specific elements can be estimated, but the data is far from complete. Further, a complete analysis of the waste water is quite difficult. From the point of view of poisoning by heavy metals, the situation is almost as uncertain and it may well be that this is a greater hazard than the radiation. Tolerance doses of all of these substances will be determined as part of the biological research program, but it may be twelve to eighteen months before ^{this} data is complete.

METHOD: It is proposed to feed water from the pond to a group of twelve rabbits and thirty mice. Blood counts will be taken periodically on the rabbits and mice

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will be sacrificed from time to time and carefully autopsied, both microscopically and radiologically. It has been determined that rabbits drink approximately 0.15 cc of water per day per gram body weight on the laboratory diet, whereas the average human consumption is about 0.03 cc per day per gram. Thus for contamination of drinking water, rabbits would get about five times the exposure as humans. Accurate figures are not available for mice, but indications are that they are about the same as rabbits.

MATERIALS NECESSARY: All necessary materials are on hand.

SCHEDULING: The experiment should start soon after the separation plant starts and continue a minimum of two years.

Personnel: Marjorie Day

H. J. CURTIS

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